Patent Claims

1. A method for the low-loss and low-noise transfer of a torque introduced into a transmission at a low shaft rotational speed to an output shaft of comparatively high rotational speed in a single-step epicyclic transmission with a plurality of planetary units, characterized in that the introduced torque is transferred via an internally straight-toothed ringwheel to 2-6 planetary units fixedly mounted radially with respect to one another in the planet carrier and, from there, to an oppositely helically toothed sun pinion of an output shaft, in that, first, the straight-toothed planetary gearwheel meshing with the ringwheel and one of the two oppositely helically toothed half wheels of a double gearwheel, meshing with the sun pinion, of each planetary unit are connected fixedly to one another on the planet shaft, and in that, with the mounting of the individual planetary units into the bearings of the planet carrier, the in each case second half wheel is brought with respect to the first half wheel, by means of devices for axial and/or rotational displacement, into a position of predetermined tooth carrying and load distribution between the individual planetary units and is locked in this position.

2. The method for torque transfer as claimed in claim 1, characterized in that the axial and/or rotational displacement of the second half wheel is carried out successively on each of the individual planetary units.

3. The method for torque transfer as claimed in claim 1 or 2, characterized in that the assignment of the position of the first half wheel of the double gearwheel to the second half wheel of the latter takes place via a rotation in relation to one another.

4. The method for torque transfer as claimed in claim 1 or 2, characterized in that the assignment of the position of the first half wheel of the double gearwheel to the second half wheel of the latter takes place via axial relative displacement.

5. The method for torque transfer as claimed in claims 1 to 4, characterized in that, after the assignment of position, the second half wheel is connected nonpositively and/or positively to the planet shaft and/or to the first half wheel and is locked there.

6. The method for torque transfer as claimed in claims 1, 2 and 4, characterized in that the second half wheel is locked axially resiliently with respect to the first half wheel.

7. The method for torque transfer as claimed in claim 6, characterized in that cup springs are used as spring element.

8. The method for torque transfer as claimed in claims 1 and 4 to 7, characterized in that the toothing profile of the straight-toothed planetary gearwheel is used, tip-shortened, as a shaft profile for the axial guidance of one or of both half wheels by means of the corresponding inner profile on the shaft.

9. The method for torque transfer as claimed in claims 1, 2, 4 and 5, characterized in that the second half wheel is adjusted in the axial direction with respect to the first half wheel by the insertion of adjusting plates between the half wheels.

10. The method for torque transfer as claimed in claims 1 to 9, characterized in that the planetary

units are introduced into their bearing points in a divided planet carrier radially with respect to the axial direction of the planet shaft.

11. A single-step epicyclic transmission with 2-6 planetary units (1) fixedly mounted radially with respect to one another on a planet carrier (7), for the low-loss and low-noise transfer of a torque introduced at low rotational speed onto a drive shaft (8) to the sun pinion (4) of an output shaft (9) of comparatively high rotational speed, characterized in that each planetary unit (1) has a straight-toothed planetary gearwheel (3) which meshes with a ringwheel (2) connected fixedly to the input shaft (8) and having an internal straight toothing and which is fixedly connected to two half wheels (5a, 5b) of an oppositely helically toothed double gearwheel (5), and in that each planetary unit (1) possesses devices, by means of which, during the mounting of the individual planetary units (1) in the planet carrier (7), the in each case second half wheel (5b) can, for the purpose of uniform load distribution to all the planetary units, be oriented with respect to the first half wheel (5a) in the axial direction and/or by rotation about the planet shaft and can be locked.